Northern Agriculture Research Branch, Canada Department
of Agriculture, Ottawa

MEMORANDUM ON AGRICULTURE IN YUKON

by F.S. Nowosad

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Special Assistant, Northern Agriculture

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Introduction

Growing of vegetables, field crops and raising of farm animals can be successful in Yukon. This statement is based upon fifteen years of scientific demonstration and experiments at the Federal Agricultural Experimental Station at Mile 1019, Alaska Highway, and upon the experiences gained during the last thirty or more years from practical and full-time farmers scattered throughout Yukon.

Right here, a word of caution should be inserted as farming and development of agriculture in Yukon is associated with many difficulties and set-backs not usually encountered in the farm areas in the provinces to the south.

Yukon is not essentially an agricultural area, as the greater proportion of land area of the Territory is not suitable for cultivation. Good soils are not readily found, are in relatively small scattered and isolated areas or divided by rugged mountains and streams. Almost all the good land is covered with trees, therefore it is difficult and expensive to clear and break for agricultural use. The climate in even the best locations is not so favourable as in the presently occupied farm areas of the Peace River Block, for example.

Due to lack of roads, railroads, navigable water courses and due to remoteness the cost of transportation is high on all the things which a farmer needs such as machinery, building materials, livestock,feed, seed, fertilizer, oil, gasoline, food,clothing and other commodities. The cost of living is high and due to seasonal employment in all or most activities in the North, coupled with sparce total population and the absence of farm reared people, farm labour is difficult to obtain and at high wages.

Because of all these factors, the cost of producing farm products is relatively high. Good markets are far away and the local population is small or usually lacks buying power.

Farming in Yukon cannot develop and expand without receiving at least the support enjoyed by farmers in the provinces.

The aid for agricultural development in Yukon might be along the following main lines:

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1. To draw up a homesteading plan. Agricultural lands to be allotted as homesteads and for sale at low cost.
2. To assist in land clearing and breaking by having available at certain points heavy machinery for this purpose at operating cost to the farmers.
3. To build access roads to sizeable blocks of agricultural lands in the Territory at no cost to the farmers.
4. To provide freight subsidies on items such as farm implements, building materials, livestock, feed concentrates, seeds and fertilizers.
5. To arrange and provide low interest farm loans.
6. To assist in the storage of perishable farm produce.
7. To provide agricultural extension services and assist in marketing farm products.

In order to undertake and provide all or some of the aids in agricultural development it is first necessary to examine and study all the aspects of farming in Yukon, including the present status, possibilities and potential in agriculture, market possibilities, financial and other assistance that may be needed and how this might be provided.

In anticipation that I would be contributing to such a study, I have been assembling pertinent information, part of which follows.

It may be noted that a great deal of work is still necessary by competent officers qualified to collect and analyze data relative to the volume and the value of farm products presently in Yukon, cost of transportation of all goods, study commodity prices, cost of establishing farms, costs of production, etc. It is then necessary to make an appraisal and recommend appropriate action by the Governments concerned.

II Agricultural Census - Statistics on acreage, livestock, etc.

Agriculture on Farms 1931-1956
Yukon

Item	Unit	1931	1941	1951	1956
Population					
Total population	No.	4230	4914	9096	12190
Farm population	"				41
Farms					
Total number of farms	"	41	26	4	16

Item	Unit	1931	1941	1951	1956
Farms classified by size of farm:					
1-4 acres	No.	2	1	1	-
5-10 "	"	5	4	-	3
11-50 "	"	7	4	1	-
51-100 "	"	3	8	1	2
101-200 "	"	19	7	-	6
201-299 "	"	-	-	-	-
300 acres and over	"	5	2	1	5
Farms classified by tenure -					
Farms operated by:					
Owner	"	39	26	4	10
Tenant	"	-	-	-	2
Part owner, part tenant	"	2	-	-	2
Manager	"	-	-	-	2
Farms classified by economic class:					
Commercial crop & livestock farms	"	-	-	-	4
Other farms	"	-	-	-	12
Areas					
Condition of farm land					
Total farm area	ac.	5197	2781	432	3997
Improved land	"	1137	1050	80	634
Unimproved land	"	4060	1731	352	3363
Crops					
Wheat, all	ac.	8	-	2	23
Oats for grain	"	63	27	10	52
Barley	"	-	-	-	15
Tame Hay	"	558	392	20	81
Other fodder crops	"	75	44	12	7
Potatoes	"	69	47	9	17
Turnips, Swedes and magels	"	5	2	3	2
Vegetables	"	-	3*	5**	7
Livestock					
Horses	No.	62	90	5	172
Cattle -					
Total number	No.	72	52	15	104
Cows and heifers, 2 yrs and over, milking or to be milked	"	29	21	5	7
Pigs					
Total number	"	41	72	-	86
Hens and chickens	No.	224	138	-	296
Total number					
Hens and pullets 6 months and over	"	180	138	-	196

* Reported on "Fruit and Vegetable questionnaire

** Grown mainly for sale

It is worthy of note that while the total population has been increasing, e number of farms and the acreage in crops declined in 1941 and 1951. However, some crease is noted for 1956.

I Potential of Arable Land

The acreages shown below are the best estimated as of this date. They are very nservative estimates as it is usual to underestimate the areas during preliminary or connaissance surveys. An example of this may be given here. Dr. A. Leahey in 1944 estimated e arable lands in Takhini-Dezadeash Valleys to be 160,000 acres. On the basis of further amination by Mr. W. Hough and Mr. F. S. Nowosad this block was estimated to contain),000 acres of good soil. During 1957 and 1958 Dr. J. H. Day, Pedologist of this partment, examined in greater detail the various soil types and classified the lands further l now reports that there are 280,000 acres of arable soil in this block. It is very likely at there are many small isolated pockets of good soil throughout Yukon that have not been and nor examined in detail, therefore no acreage figures have as yet been assigned to h areas and are not shown below.

Potential Acreage of Arable Lands

	Acres
Yukon Territory	
Takhini - Dezadeash Valleys	280,000
Yukon River and Tributaries	60,000
Tagish and Little Atlin	8,000
Dawson (City) area	6,000
Total	354,000

It should be noted here that all of the above acreage is not readily available immediate use. A good proportion of this is presently covered by forest and doubtedly will remain in that state for many years to come as the cost of land clearing high under the present conditions. Many hundreds of acres are located in river valleys, ek beds and are inaccessible by the existing roads. This may change quickly if: more roads are constructed, (b) assistance is given for clearing land, and (c) other aids agricultural developments are made available to the present and prospective farmers, as eady mentioned.

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Success or Failure with Crops and Livestock

The most accurate and factual data on the growing of various crops and the raising livestock in Yukon are found in the Progress Report 1945-52, Dominion Sub-station, Whitehorse, Y.T., and subsequent Annual Reports to the Department. These reports deal with the results at Mile 1019, which is located at the western boundary of Takhini-Dezadeash Valley mentioned above. It is in the largest single block of potentially arable land in Yukon and represents a good cross-section of soils, climate, etc., that may be encountered in the region. It is now known that there are many small areas, elsewhere in Yukon, that have more favourable climatic conditions for crop growth.

Briefly, and not in order of importance, the results at Mile 1019 are as follows:

1. Early varieties of barley produce good quality of grain, over 35 bushels per acre.
2. Early oats often produce 60 to 75 bushels of grain. Later varieties or later sown oats are commonly grown for bundles (sheaves) for forage in lieu of hay.
3. Wheat is not generally recommended as even early varieties have a 50:50 chance to mature. Good feed grades of wheat close to 30 bushels per acre may be produced, especially when grown with the addition of commercial fertilizers.
4. Fall rye has averaged 35 bushels per acre and can be grown with success.
5. Fall wheat has not outyielded spring wheat, but the quality is somewhat superior and therefore this crop is fairly dependable.
6. Most garden crops can be grown. Some crops require special treatment as starting in the greenhouse, hot-beds or cold frames. Others require some protection in plastic shelters, as for example, sweet corn and beans.
7. Beef cattle mainly Shorthorns and Herefor have been raised in Yukon with complete success. At Mile 1019 the herd has been wintered satisfactorily on green oat bundles and native or wild hay. Some oat and barley chop was used for yearlings for better gains.
8. Hogs have been raised with success on rations composed of imported protein supplement mixed with 60% or more home-grown coarse grains. Some hogs have been raised on cooked garbage from Whitehorse.
9. Experiments are continuing on raising poultry for egg production. Results are promising when only 40 per cent of important protein supplement was mixed with home-grown grain. During prolonged periods of very cold weather some heat lamps had to be used in the laying house. A new type of poultry house is now under test at Mile 1019.

10. The major problem is the production of forage crops (hay and pasture). The most promising grasses are brome, wheat grass, fescues and reed canary grass. Legumes, in general, are difficult to maintain because of a disease known as Brown Root Rot. However, alfalfa, particularly Medicago falcata, is useful in short rotations both for hay and pasture. In the meantime green-oat bundles are the main fodder crop in Yukon.

11. Commercial fertilizers, particularly 16-20-0, have been giving good increases, but not as good as good manure, if available. The economics of this has not been worked out, but it appears that crop increases have to be quite large in order to pay for the present high freight charges on fertilizers brought from Vancouver.

12. In some cases lack of total annual precipitation and/or low rainfall during the growing months has reduced maximum yields possible. Indications are that irrigation may be necessary, but this has not been fully tested.

Agricultural Research in Yukon

As already stated, the Experimental Farm at Mile 1019 is collecting much valuable information about the possibilities of farming. The results apply firstly to the area in the immediate vicinity of the Farm. Secondly, they apply in a general way to at least the southern half of Yukon. It has been known for a long time that certain crops can be grown in certain locations as, for example, at Carcross, Mayo, Dawson, Carmacks, and others but the level of production and the chances of success have not been determined until the Farm was begun in 1945.

Research work will be continued and expanded as opportunity, staff, time and money allows. Work will be continued along the following general lines.

1) Variety tests with all field crops, including cereal, forage, horticultural crops, mainly in search of the most suitable variety for Yukon.

2) It may be necessary to initiate a certain amount of selection and breeding work on crops as, for example, a suitable legume for Yukon. This work will be closely integrated with Laboratories and Regional Stations in the Provinces.

3) Plant introduction nurseries will be increased to contain many varieties and kinds of crops from other agricultural areas including Alaska, Sweden, Norway and Russia.

The most promising material will then be tested along with recognized Canadian varieties.

4) Method of crop production will receive a careful study, beginning with land clearing and breaking followed by different crop rotations, fertilizers, etc., to establish the best procedures in farming.

5) Soil surveys will be expanded and on that basis the performance of crops will be studied on the various soil types encountered. This will mean an expansion of "off-station" testing which was begun several years ago and had to be suspended due to lack of research personnel.

6) Basic experiments will be conducted with beef cattle. This will include studies on winter housing, carrying capacities of native and cultivated pastures, type of feeds and related subjects.

7) Poultry industry will be investigated.

8) Production of hogs will be undertaken on locally grown feeds with minimum of imported concentrates.

9) Special aids and techniques for the production and storage of vegetables will be undertaken.

The use of cheaply constructed greenhouses and crop shelters is showing considerable promise.

10) In general, the future of the Experimental Farm at Mile 1019 will be one of carefully planned expansion and renewed interest.

II Climatic factors limiting agriculture

Because of the extent, topography and geographical location, Yukon has a variety of climates, depending upon location. Changes may occur in relatively short distances, therefore one can only generalize until long-time records are available for any specific farm location.

It is not my intention to present all data now available on climate. It is sufficient to say here that the meteorological data at Mile 1019 have been recorded for fifteen years. Many other stations collect data in connection with aviation and these can now serve agriculture to some extent as well.

In a recent paper presented at the British Columbia Natural Resources Conference, I discussed some aspects of climate in Yukon. Charts and tables were prepared to illustrate the trends in climate. (This paper may be obtained on request).

It should be noted here that not all meteorological stations presently in operation are located in typical agricultural areas; therefore, special or additional stations should be established to obtain long-term data for this purpose.

II The Economics of Farming

As mentioned in the Introduction above, if examination of agricultural possi-ilities are to be carried further, it is important that facts be established as soon as ossible on the entire field of the economics of farming in Yukon. Such facts may lead to he conclusion that farming should not be undertaken except in certain locations. They may stablish that only certain types of farming can be economical.

Some of the facts required for an economic survey should include information on he following points:

1) The methods of acquiring farm lands and the costs to (a) purchase and (b) lease.

2) Establish the costs of land clearing and breaking and also the cost of ubsequent farm operations.

3) Study the cost of freight on agricultural machinery, livestock, fertilizers, uilding materials, etc., to the farmer.

4) Determine the cost of farm buildings.

5) Study the market outlets and the prices for commodities to and from the arms and others.

6) Obtain accurate data on the kind and the total quantity of farm products hipped for use in Yukon - in order to decide on the type and size of farms.

7) Examine the growth of populations, industrial trends, etc., to anticipate uture demands for agricultural products.

8) Examine the various forms of aids and farm subsidies provided in the rovince and how these may be applied in Yukon Territory.

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